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(71) Applicant: TB SOFT INC. [KR/KR]; Hwashin B/D 604, 31-12, Chamwon-dong, Seocho-ku, Seoul 137-030 (KR).

(72) Inventor: AHN, Kyung-Hwa; 907-202, Byeolbit Maeul, Hwajeong-dong, Dekyang-ku, Koyang-si 412-270 (KR).

(74) Agent: NAM, Sang-Sun; 8th Fl., The Korea Chamber of Commerce & Industry Bldg., #45, 4-ga, Namdaemoon-ro, Jung-ku, Seoul 100-094 (KR).

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(54) Title: INTERNET BILLING PROCESSING METHOD
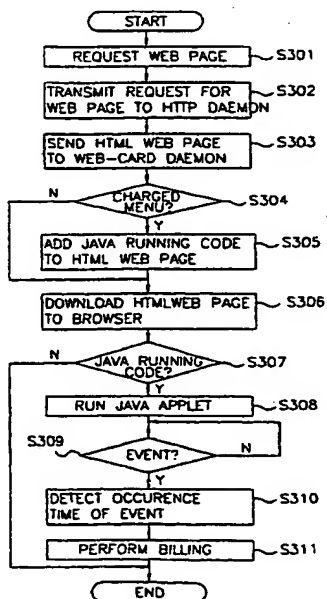
(57) Abstract: A method for billing processing communication expenses on an internet using a web-card daemon is provided. In the method, a desired web page is requested by a web browser of a user. A hypertext transfer protocol web page is received from a hypertext transfer protocol daemon in response to the request for the web page, and it is judged whether the hypertext transfer protocol web page is a charged or free menu, by the web-card daemon. Addition of an applet running code to the hypertext transfer protocol web page is controlled by the web-card daemon according to the judgement result. The hyper text transfer protocol web page is downloaded by the web-card daemon to the web browser. It is judged whether an applet running code is included in the corresponding web page by the web browser. It is judged whether an event occurs on a display window of the web browser by the web browser when the applet running code is included in the corresponding web page. An occurrence time of the event is detected by an applet of the web browser when the event occurs. A billing with respect to the web page of the charged menu used is performed based on the occurrence time of the event detected by the web-card daemon.

INTERNET BILLING PROCESSING METHOD

5   TECHNICAL Field

The present invention relates to an internet billing processing method, more particularly, to a method for billing processing communication expenses on an internet
10   using a web-card daemon.

BACKGROUND ART

The development of computerized distribution
15   information resources, such as the "Internet", allows users to link with servers and networks, and thus retrieve vast amounts of electronic information that was previously unavailable using conventional electronic mediums. Such electronic information increasingly is displacing more
20   conventional techniques of information transmission, such as newspapers, magazines, and event television. The term "internet" is an abbreviation for "internetwork", and refers commonly to a collection of computer networks that use the Transport Control Protocol/Interface
25   Program(TCT/IP) suite of protocols.

U.S. Patent No. 5,794,221(issued to Andrew Egendorf on August 11, 1998) discloses an internet billing method which creates a new business opportunity for telephone companies, cable television companies, existing Internet
30   access providers, and companies offering financial services by creating a way for them to offer to their subscribers a method of securely buying and selling goods and services of any value over the internet.

FIG. 1 is a block diagram for showing communication
35   relationship between a web server and a web browser.

An internet protocol(IP) network 102 can be, for example, a public internet or a private internet. Host system 104 and client system 106 can communicate across IP network 102 using a hyper-text transfer protocol(HTTP).

Host system 104 and client system 106 can be, for example, a personal computer or computer workstation, and generally include a data storage device, a memory device, a processor and a display. The memory device in host system 104 can store code for a web server 108 and the processor can execute a web server 108. The data storage device in host system 104 can store a web page 110 and an associated applet 112. Web page 110 can be written in the hyper-text mark-up language(HTML), and applet 112 can be written in an interpretive language such as JAVA. Analogous to host system 104, the memory device in client system 106 can store a code for a web browser 114 and the processor can execute a web browser 114. The memory device in client system 106 can store a downloaded web page 116 and an associated applet 112. Web browser is an applet-capable web browser and can both display web page and execute applet.

In operation, a user of client system 106 can use web browser in order to transmit a request for web page across IP network 102. The request can be, for example, a uniform resource locator(URL) for web page 110. Web server 108 can receive the request from web browser 114 and in response can package and transmit web page 116 and applet 118 to web browser 114 across IP network 102. Web server 108 packages web page 116 and applet 118 based upon web page 110 and applet 112 stored on host system 104. After downloading web page 116 and applet 118, web browser 114 can display web page 116 to a user of client system 106 and can execute applet 118. Applet 118 only needs to be downloaded once and is executed by web browser 114. When a link is selected in web page 116, web server 108 is sent

a request across IP network 102 and can transmit the selected page.

The execution of applet 118 by web browser can provide enhanced functionality to web page. According to the teachings of the present invention, applet creates and manages one or more embedded menus in the displayed web page. Each embedded menu provides a user of web browser with a plurality of links through one action in the displayed web page 116.

A conventional HTTP has disconnection characteristics so that a host system cannot recognize whether or not a user uses a browser nor whether the browser operates or stops. For example, it is assumed that an office worker uses a charge menu on a browser and leaves the office without turning off the browser. When the office worker pushes a reload button on the browser at next use, the host system cannot recognize anything except changing the date. That is, in the conventional internet, the host system can bill only web pages of the charged menu in units of dates or the number of hits but can not bill the web pages of the charged menu in units of minutes or seconds. Thus, an exact billing with respect to web pages of the charged menu used can not be performed.

DISCLOSURE OF INVENTION

Therefore, it is an object of the present invention, for the purpose of solving the above mentioned problems, to provide an internet billing processing method capable of performing a billing with respect to web pages of the charged menu on an internet.

In order to attain the object, according to the present invention, there is provided an internet billing processing method, said method comprising the steps of:

(i) requesting a desired web page by a web browser of

a user:

(ii) receiving a hypertext transfer protocol web page from a hypertext transfer protocol daemon in response to the request for the web page and judging whether the hyper text transfer protocol web page is a charged or free menu, by the web-card daemon;

(iii) controlling addition of an applet running code to the hypertext transfer protocol web page by the web-card daemon according to a judgement result of step (ii);

(iv) downloading the hyper text transfer protocol web page by the web-card daemon to the web browser of a user;

(v) judging whether an applet running code is included in the corresponding web page by the web browser;

(vi) judging whether an event occurs on a display window of the web browser by the web browser when the applet running code is included in the corresponding web page;

(vii) detecting an occurrence time of the event by an applet of the web browser when the event occurs in step (vi); and

(viii) performing a time billing with respect to the web page of the charged menu used based on the occurrence time of the event detected in step (vii) by the web-card daemon.

Preferably, the event includes a forward button event, a back button event, a hyper text markup language event, a browser exit event, a mouse button event, a jump uniform resource locator event, and a menu event. More preferably, the occurrence time of the event includes a start time, a pause time, a resume time, a stop time, and an end time of the event.

Other objects and further features of the present invention will become apparent from the detailed description when read in conjunction with the attached drawings.

BRIEF DESCRIPTION OF DRAWINGS

Other features and advantages of the present invention
will become more apparent from the following description
taken in connection with the accompanying drawings, wherein:

FIG. 1 is a block diagram for showing a communication
relationship between a web server and a web browser;

FIG. 2 is a block diagram for showing an internet
billing processing apparatus according to an embodiment of
the present invention; and

FIG. 3 is a flow chart for illustrating the internet
billing processing method according to an embodiment of the
present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

The preferred embodiment of the present invention will
hereinafter be described in detail with reference to the
accompanying drawings.

FIG. 2 is a block diagram of an internet billing
processing apparatus according to an embodiment of the
present invention.

The time billing apparatus includes a client system 202
and a web server 208.

The client system 202 includes a web browser 204 having
a JAVA applet 206. The web browser 202 requests desired data,
that is, a web page RW by entering a uniform resource
locator(URL).

The web server 208 includes a web-card daemon 210 and a
hyper text transfer protocol(HTTP) daemon 212.

The web-card daemon 210 receives the request for the web
page RW from the web browser 204. The web page RW from the
web-card daemon 210 is provided to a HTTP daemon 212.

The HTTP daemon 212 responds to the request for the

web page RW from the web-card daemon 210 and sends a web page

formatted in the HTML to the web-card daemon 210.

The web-card daemon 210 judges whether the HTML web page from the HTTP daemon 212 is a charged or free menu. When the HTML web page is the charged menu, the web-card daemon 210 adds a JAVA running code to the HTML web page and downloads the HTML web page to which the JAVA running code is added to the web browser 204. On the other hand, when it is judged that the HTML web page from the web-card daemon 210 is the free menu, the web-card daemon 210 downloads the HTML web page to the web browser 204.

The web browser 204 judges whether or not the JAVA running code is included in the HTML web page from the web-card daemon 210. When the JAVA running code is absent in the HTML web page from the web-card daemon 210, a total operation finishes. On the contrary, when it is judged that the JAVA running code is included in the HTML web page from the web-card daemon 210, the web browser 204 generates a JAVA enable signal according to the JAVA running code to run the JAVA applet 206. The JAVA enable signal is provided to the JAVA applet 206.

The JAVA applet 206 operates in response to the JAVA applet 206 and detects whether or not an event occurs. When the event occurs, the JAVA applet 206 detects the occurrence time of the corresponding event.

The web-card daemon 210 receives the occurrence time ET of the corresponding event from the JAVA applet 206 and performs a billing with respect to the HTML web page of the charged menu based on the occurrence time ET of the corresponding event.

Hereinafter, the internet billing processing method according to an embodiment of the present invention will be described referring to FIG. 3. FIG. 3 is a flow chart for illustrating the internet billing processing method according to an embodiment of the present invention.

In step S301, a user of a client system 202 uses a web browser 204 to request desired data, that is, a web page RW by entering a uniform resource locator(URL). The web page is a data file written in a hyper text language that may have text, graphic images, and even multimedia objects such as sound recordings, or move video clips associated with that data file. The web page can be displayed as a viewable object within a computer system. A viewable object can contain one or more components such as spreadsheets, text, hot links, pictures, sound, and video objects. A web page can be constructed by loading one or more separate files into an active directory or file structure that is then displayed as a viewable object within a graphical user interface. The request for the selected web page RW is then transmitted to a web-card daemon 210 of a web server 208.

A web-card daemon 210 of the web server 208 receives the request for the web page RW from the web browser 204 and transmits the web page to an HTTP daemon 212 (step S302). The HTTP is a known application protocol that provides users access to files(which can be in different formats such as text, graphics, image, sound, video, etc.) using a standard page description language known as hypertext markup language(HTML). The HTML provides basic document formatting and allows the developer to specify "links" to other servers and files. Use of an HTML-compliant client browser involves specification of a link via a URL. Upon such specification, the client makes a Transfer Control Protocol/Interface Program(TCP/IP) request to the server identified in the link and receives a "web page"(namely, a document formatted according to HTML) in return.

The HTTP daemon 212 responds to the request for the web page RW from the web-card daemon 210 and sends a corresponding web page formatted in the HTML to the web-

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card daemon 210(step S303).

The web-card daemon 210 receives the HTML web page from the HTTP daemon 212 and judges whether or not the received HTML web page is a charged menu(step S304).

As a result of the judgement in step S304, when the received HTML web page is the charged menu, the web-card daemon 210 adds a JAVA running code to the HTML web page(step S305). Then, the web-card daemon 210 downloads the HTML web page to which the JAVA running code is added to the web browser 204(step S306).

On the other hand, when it is judged that the HTML web page received by the web-card daemon 210 in step S304 is a free menu, the web-card daemon 210 downloads the HTML web page to the web browser 204(step S306).

In step S307, the web browser 204 judges whether or not the JAVA running code is included in the HTML web page from the web-card daemon 210. As a result of the judgement in step S307, when the JAVA running code is absent in the HTML web page from the web-card daemon 210, a total operation finishes. On the contrary, when it is judged that the JAVA running code is included in the HTML from the web-card daemon 210 in step S307, the web browser 204 generates a JAVA enable signal according to the JAVA running code to run the JAVA applet 206(step S308). The JAVA enable signal is provided to the JAVA applet 206.

In step S309, the JAVA applet 206 operates in response to the JAVA applet 206 and detects whether or not an event occurs. The event includes a forward button event, a back button event, a hyper text markup language event, a browser exit event, a mouse button event, a jump uniform resource locator event, and a menu event.

As a result of the judgement in step S309, when the event occurs, the JAVA applet 206 detects the occurrence time ET of the corresponding event(step S310). The occurrence time ET of the corresponding event detected by

the JAVA applet is supplied to the web-card daemon 210. The occurence time of the corresponding event includes a start time, a pause time, a resume time, a stop time, and an end time.

The web-card daemon 210 receives the occurrence time ET of the corresponding event from the JAVA applet 206 and performs a billing with respect to the HTML web page of the charged menu based on the occurrence time ET of the corresponding event(step S311). At this time, the HTML web page of the charged menu can have text and image. The downloading start time of the text is the same as that of the image but the completion time of the text is earlier than that of the image. So the time billing with respect to web pages of a charged menu starts from the time when the downloading of the text finishes. A billing result BR by the web-card daemon 210 is provided to the web browser 204 to thereby issue the bill to the user.

As mentioned above, the present invention can bill the web pages of the charged menu in units of minutes or seconds so that an exact billing with respect to web pages of the charged menu used can be performed.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

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CLAIMS

1.   An internet billing processing method, said method comprising the steps of:
(i) requesting a desired web page by a web browser of a user:
(ii) receiving a hypertext transfer protocol web page from a hypertext transfer protocol daemon in response to the request for the web page and judging whether the hyper text transfer protocol web page is a charged or free menu, by the web-card daemon;
(iii) controlling addition of an applet running code to the hypertext transfer protocol web page by the web-card daemon according to a judgement result of step (ii);
(iv) downloading the hyper text transfer protocol web page by the web-card daemon to the web browser of a user;
(v) judging whether an applet running code is included in the corresponding web page by the web browser;
(vi) judging whether an event occurs on a display window of the web browser by the web browser when the applet running code is included in the corresponding web page;
(vii) detecting an occurrence time of the event by an applet of the web browser when the event occurs in step (vi); and
(viii) performing a time billing with respect to the web page of the charged menu used based on the occurrence time of the event detected in step (vii) by the web-card daemon.

2.   The method as described in claim 1, wherein when the corresponding web page is the charged menu in step (ii), adding the applet running code to the corresponding web page.

3.   The method as described in claim 1, wherein the

event includes a forward button event, a back button event, a hyper text markup language event, a browser exit event, a mouse button event, a jump uniform resource locator event, and a menu event.
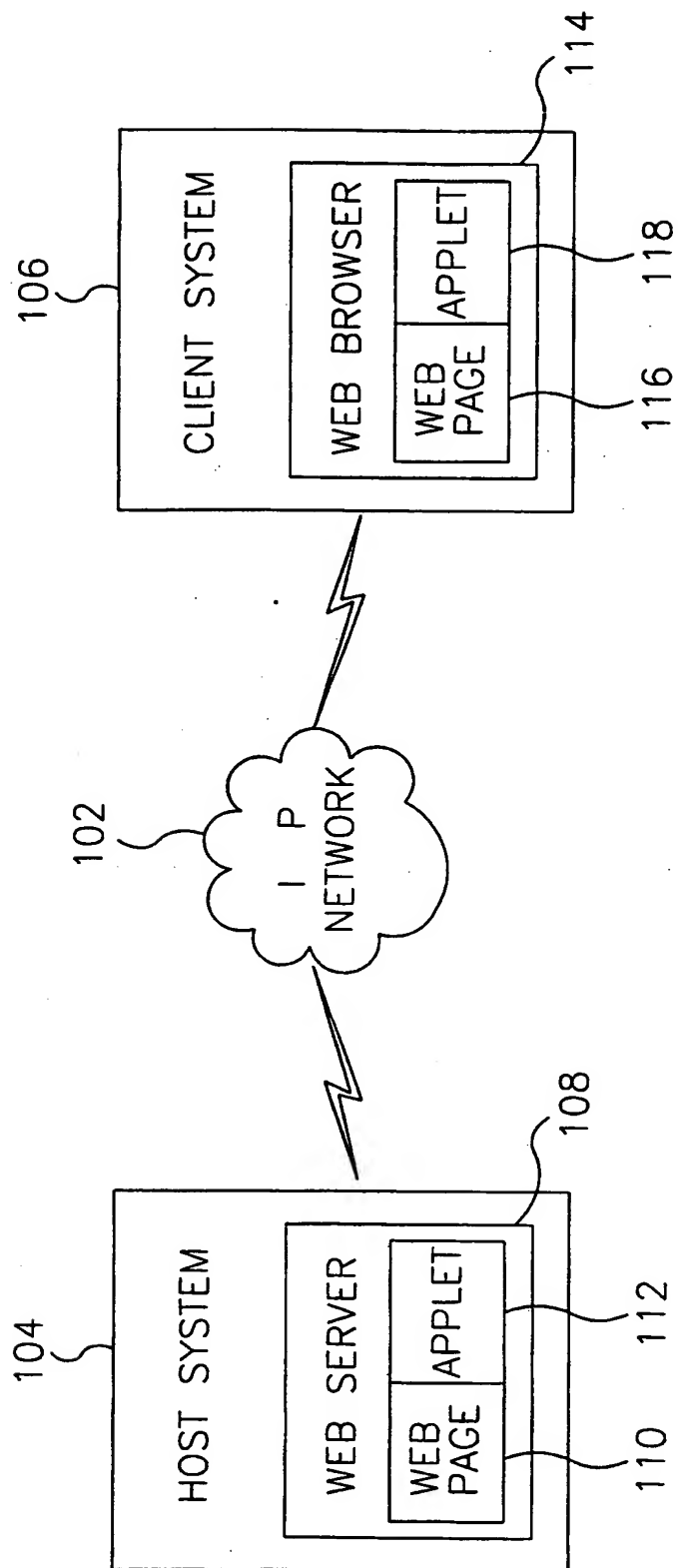
5

  4. The method as described in claim 1, wherein the occurrence time of the event includes a start time, a pause time, a resume time, a stop time, and an end time of the event.
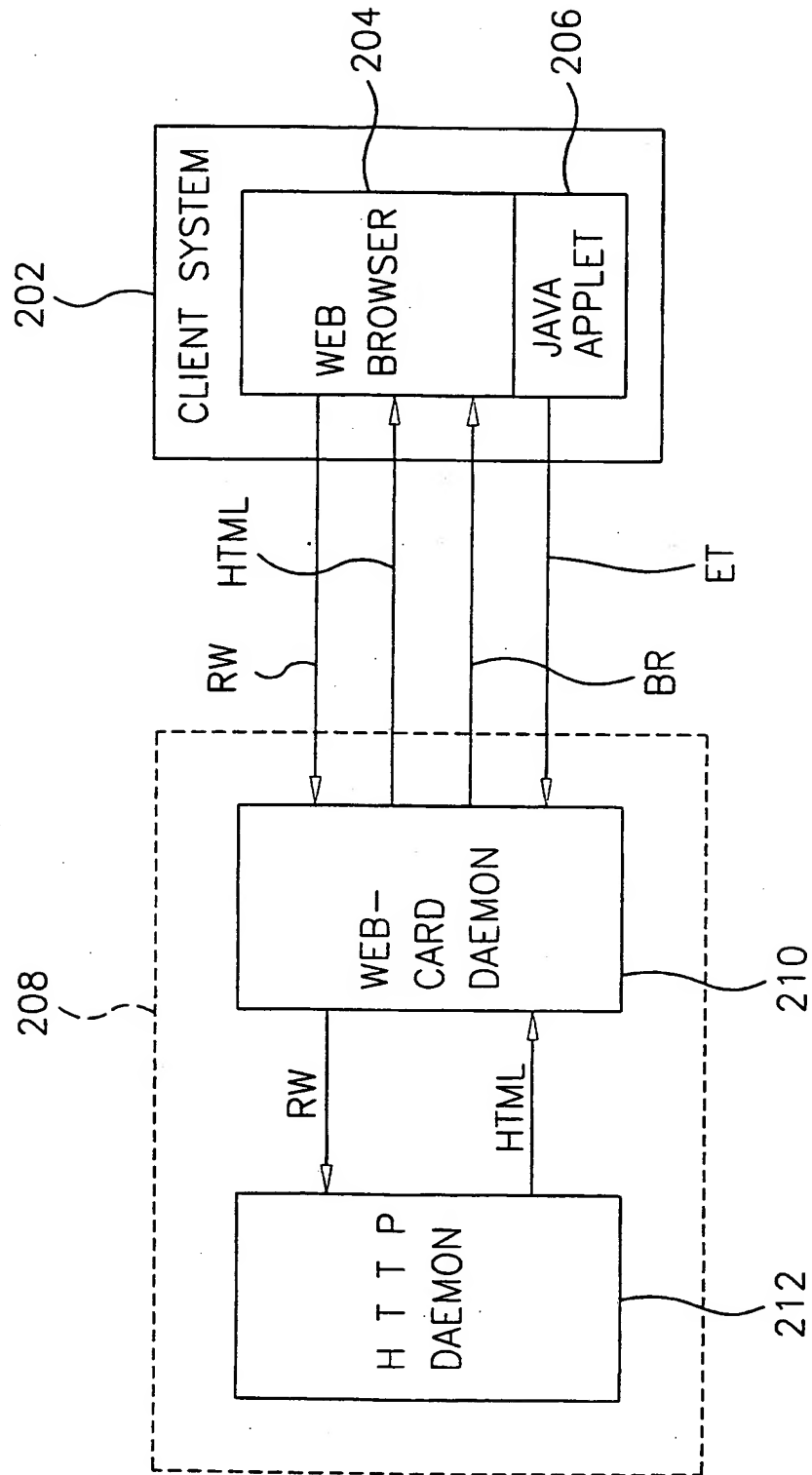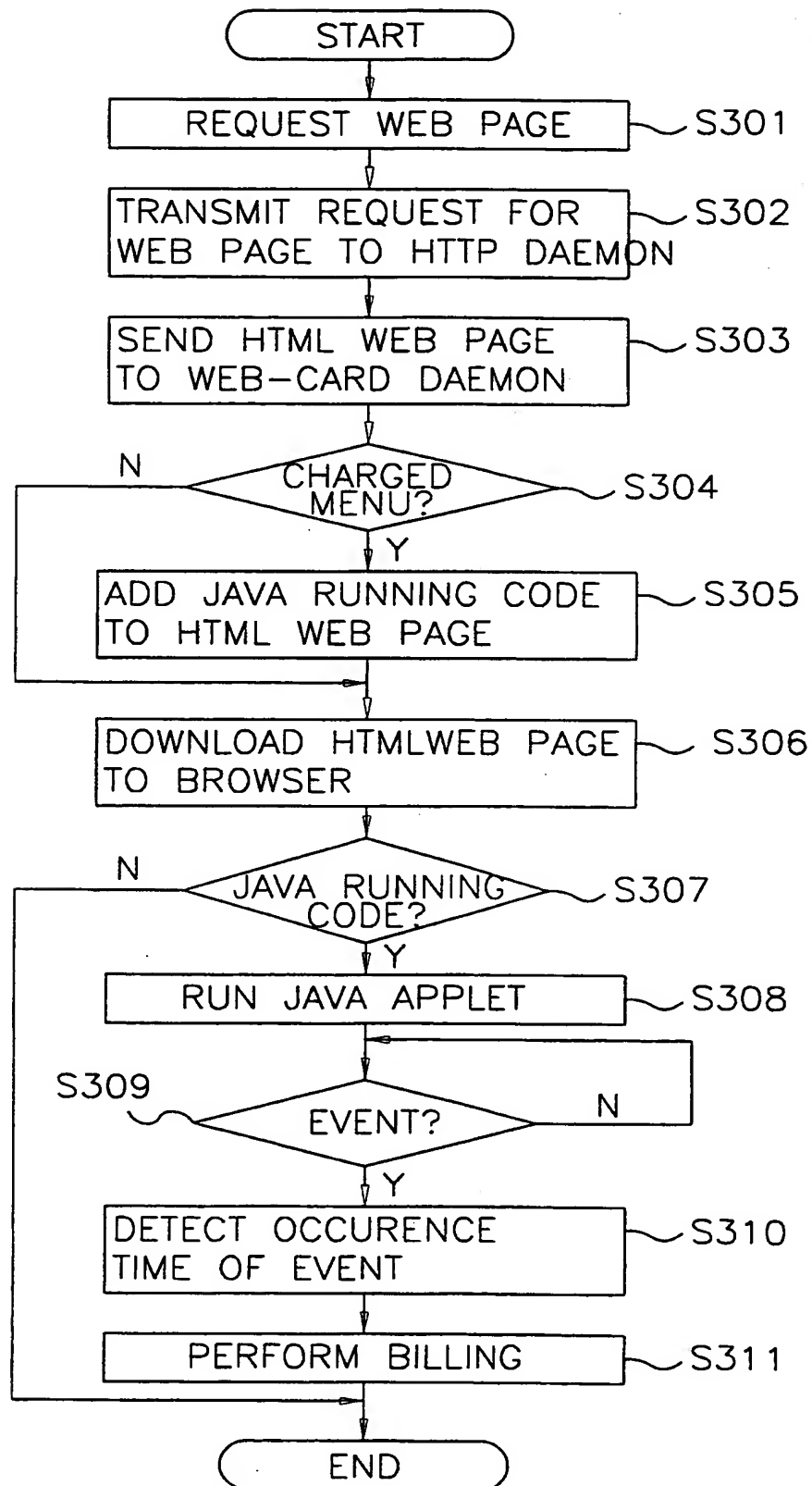
10

FIG.1

FIG.2

FIG.3

```
                    ( START )
                        │
                        ▼
        ┌──────────────────────────────┐
        │      REQUEST WEB PAGE          │───── S301
        └──────────────────────────────┘
                        │
                        ▼
        ┌──────────────────────────────┐
        │   TRANSMIT REQUEST FOR         │───── S302
        │   WEB PAGE TO HTTP DAEMON      │
        └──────────────────────────────┘
                        │
                        ▼
        ┌──────────────────────────────┐
        │   SEND HTML WEB PAGE           │───── S303
        │   TO WEB-CARD DAEMON           │
        └──────────────────────────────┘
                        │
              N         ▼
         ┌────────◇  CHARGED   ◇───── S304
         │          ◇  MENU?   ◇
         │              │ Y
         │              ▼
         │  ┌──────────────────────────────┐
         │  │  ADD JAVA RUNNING CODE         │───── S305
         │  │  TO HTML WEB PAGE              │
         │  └──────────────────────────────┘
         │              │
         └──────────────┤
                        ▼
        ┌──────────────────────────────┐
        │  DOWNLOAD HTMLWEB PAGE         │───── S306
        │  TO BROWSER                    │
        └──────────────────────────────┘
                        │
              N         ▼
         ┌────────◇  JAVA RUNNING ◇───── S307
         │          ◇    CODE?     ◇
         │              │ Y
         │              ▼
         │  ┌──────────────────────────────┐
         │  │      RUN JAVA APPLET           │───── S308
         │  └──────────────────────────────┘
         │              │◄──────────────┐
         │              ▼               │
         │  S309  ◇   EVENT?   ◇── N ───┘
         │        ◇           ◇
         │              │ Y
         │              ▼
         │  ┌──────────────────────────────┐
         │  │  DETECT OCCURENCE              │───── S310
         │  │  TIME OF EVENT                 │
         │  └──────────────────────────────┘
         │              │
         │              ▼
         │  ┌──────────────────────────────┐
         │  │    PERFORM BILLING             │───── S311
         │  └──────────────────────────────┘
         │              │
         └──────────────┤
                        ▼
                    (  END  )
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INTERNATIONAL SEARCH REPORT

A.	**CLASSIFICATION OF SUBJECT MATTER**

IPC7 G06F 17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B.	**FIELDS SEARCHED**

Minimun documentation searched (classification system followed by classification symbols)

IPC7 G06F 17/00, IPC7 G06F 17/60, IPC7 G06F 19/00,

Documentation searched other than minimun documentation to the extent that such documents are included in the fileds searched

Electronic data base consulted during the intertnational search (name of data base and, where practicable, search trerms used) .

C.	**DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5905736 A (AT&T CORP.) 18. MAY. 1999 ABSTRACT	1
A	US 5864610 A (AT&T CORP) 26.JANUARRY. 1999 ABSTRACT	1
A	US 5845267 A (AT&T CORP.) 1.DECEMBER.1998 ABSTRACT	1
P	US 5943656 A (AVISTA ADVANTAGE INC.) 24. AUGUST. 1999 ABSTRACT	1

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority
"A" document defining the general state of the art which is not considered to be of particular relevance	date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevence; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)	"Y" document of particular relevence; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination
"O" document referring to an oral disclosure, use, exhibition or other means	being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 JUNE 2000 (30.06.2000)	10 JULY 2000 (10.07.2000)

Name and mailing address of the ISA/KR	Authorized officer
Korean Industrial Property Office Government Complex-Taejon, Dunsan-dong, So-ku, Taejon Metropolitan City 302-701, Republic of Korea	SONG, Dae Jong
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-5992

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